



# ICI MAGAZINE

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## CONTENTS

- page 146 **Polythene Film in your Garden** by Roger Gibbins  
page 150 **Accident or Design?** by Wallis Heath  
page 154 **One Man and his Job—Explosion Specialist**  
page 156 **The Petrochemical and Polymer Laboratory** by Duncan Davies  
page 159 **People and Events**  
page 165 **ICI's Contribution to the Textile Industry** by Michael Danckwerts  
page 168 **Another Kind of Shop Floor** by Marjorie Hock  
page 170 **Gardeners' Guide** by Percy Thrower  
page 172 **The Parthian Shot** by Margaret Thompson  
page 174 **Plastics in the House of the Future**  
page 177 **The Bobbin Boys** by Philip Reilly



Michael Danckwerts Duncan Davies Roger Gibbins Wallis Heath Philip Reilly Margaret Thompson

## CONTRIBUTORS

**Michael Danckwerts** was News Editor of the *Magazine* from 1951 to 1958. Has since then been a copywriter in Central Publicity Department, contributing occasional—usually unsigned—pieces to the *Magazine*. His recreations are reading, gardening and the cinema.

**Duncan Davies** is Head of ICI's Petrochemical and Polymer Laboratory, the subject of his article on page 156. Before he took over this new post in 1962, Dr. Davies was Research Director of General Chemicals Division. Earlier he worked on research and production with the Dyestuffs Division. Believes enthusiastically in the role of his native North-west as the main present and future centre of British industrial research and development, and in the part this will play in making Northern cities more attractive to live in.

**Roger Gibbins**, Site Manager of the Chertsey factory of British Visqueen Ltd. and Manager of Vi-Plastics Ltd., joined the sales staff of British Visqueen in 1958 when the company of which he was then Sales Manager became part of ICI, and has played a large part in organising and developing the Vi-Plastics mail-order sales campaign. He is a well-known member of the Chertsey Rotary Club, and among his other interests are gardening, with emphasis on the use of plastics, archery and deep-sea sailing.

**Wallis Heath** entered the printing industry in 1933 with a Dundee firm of fine art printers and publishers whose activities covered letterpress, lithography, photogravure, die-stamping and photographic printing. In 1951 he was elected chairman of the Scottish Young Master Printers. Joined ICI in 1961 as General Manager of The Kynoch Press.

**Marjorie Hock**, who contributes the third in our series of articles on retirement, was Internal Relations Officer of Metals Division, now IMI (Kynoch), for seven years. Now she lives in Surrey, where, with a partner, she runs a shop selling modern pictures, fabrics, porcelain and glass. Miss Hock, who is of Dutch parentage, says her knowledge of languages is proving a useful asset when helping foreign customers choose souvenirs of their visit to Britain.

**Philip Reilly** is a member of the Communication Section of Central Personnel Department, in which the *Magazine* is now located.

**Margaret Thompson** retired a year ago after ten years as a canteen manageress at Wilton. Before that she served for a number of years in the WAAF, in which she was commissioned in 1942, and now she relates one amusing incident in her service career. Her hobbies are gardening, writing and making dolls of different kinds which she raffles in aid of local charities.

**Front cover:** Terence Hutchinson, a Wilton Bobbin Boy, replacing denier identification roundels in the ends of bobbins. (Photograph by Maurice Downing, Wilton Photographic Section)

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# POLYTHENE FILM IN YOUR GARDEN

by Roger Gibbins

"I OFTEN wonder what we gardeners did before polythene film was introduced into the garden." This opinion, recently voiced by Percy Thrower in one of his *Magazine* gardening columns, is echoed by many an amateur gardener.

As far as the garden is concerned, polythene is here to stay. Results obtained from its use surprise the most sceptical gardener, and it is invaluable on even the smallest plot. This article is an attempt to show the amateur gardener some of the many applications for the material in the garden. A company now solely concerned with the mail order and selling of polythene film for garden and household uses is Vi-Plastics Ltd., controlled by British Visqueen Ltd., an ICI subsidiary.

Vi-Plastics has a range of clear polythene bags and black and clear sheet and tubular polythene film always available for immediate despatch to the gardener as well as to anybody else who needs polythene for that small job in the garden or home.

Clear polythene film is a transparent, flexible material which, for practical purposes, is waterproof. It is made in many different thicknesses, but Vi-Plastics stock only the three most popular ones, i.e. 120 gauge (0.0012 in.), 200 gauge (0.002 in.) and 500 gauge (0.005 in.). These are referred to in the company's literature as standard, medium and heavy.

Until quite recently glass was the only transparent material used for greenhouse construction. Now inexpensive and efficient greenhouses can be quickly and easily put up using heavy quality polythene. The three main advantages of the material for covering greenhouses are cheapness, flexibility, and light weight. It is much lighter in weight than glass, and only rough sawn timber needs to be employed on construction. The polythene is simply fixed to the timber framework with drawing pins or wire staples (as used in offices) and finally battened down with nails through laths.

A point worth bearing in mind, however, is that polythene deteriorates in bright sunshine over a period of time and will need replacing each year. It is customary to replace the film in autumn, so making film and greenhouse secure in advance of the gales and bad weather of the winter period.

Amateur growers of chrysanthemum

blooms for showing frequently construct rough shelters, covered with polythene, over the crop as it comes into flower, thereby protecting the blooms from damage. With polythene it is possible to provide shelter for a period of weeks at a critical time in the development of a crop. False ceilings are another way in which polythene can cut greenhouse costs. This

technique is particularly useful when glasshouses are old and leaky or when glass is broken and heat is being lost.

Many amateur gardeners had to sit by during last winter's hazards and watch expensive glass cloches break under snow, wind, and abnormal weather conditions. By using polythene instead of glass, this breakage can be eliminated; indeed, the



Orchids and cyclamen growing in a glasshouse lined with lightweight clear polythene



material is now extensively used for the protection of crops in nurseries and private gardens.

Such simple and inexpensive protection can mean earlier and better crops. Lettuce, for example, can be harvested up to a month earlier than usual. By cloching a few rows of the strawberry bed in February, fruit can be picked up to three weeks earlier, thus extending the season and making strawberries available—with or without cream—for a longer period.

Weeds break many a gardener's back. One way of eliminating them and at the same time achieving better results from your gardening efforts is to mulch with black polythene supplied in medium or heavy grades by Vi-Plastics.

Mulching has been defined as the application of a covering layer of material to the soil's surface. Since very early times mulching in one form or another has been practised. A remarkable variety of materials has been used, including such natural products and residues as compost, straw, sawdust, bracken, hops and peat.

Polythene film as a mulch improves soil condition and increases the moisture content of the surface layer. Earliness, quality or total yield of a crop is often improved, probably because of the ability of roots

to make better use of the most fertile soil near to the surface.

The physical condition of soil is important under plastic mulches. With strawberries cleaner crops result because soil cannot be splashed on to the berries by rain and the common fungus disease Grey Mould (botrytis) is reduced. Plastic mulching of course eliminates the need for the traditional covering with straw.

It is a straightforward enough job to unroll a sheet of black polythene over a bed and plant through holes made with a sharp dibber. On an exposed site, however, a wise precaution is to bury the edges of the sheet about 6 in. in the ground. This method is particularly recommended for potatoes, but black polythene can be useful generally in the vegetable garden as well as for fruit trees, shrubs, and even roses. The material is tough and long lasting. Unlike clear film, it is not weakened in sunshine, and so, carefully removed at the end of the season, it can be stored and re-used.

During the very severe weather conditions of last winter many gardeners, even in suburban areas, lost their crops of brassicas (cabbage family) to starving woodpigeons. An enterprising grower of Brussels sprouts in Evesham fooled the birds by slipping a large polythene bag

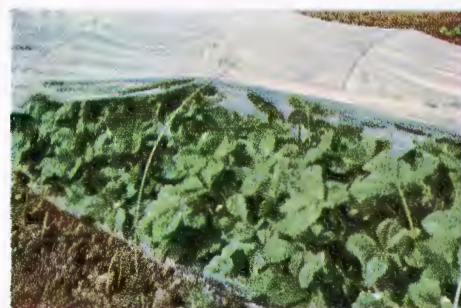
over each plant, tying the mouth at ground level. An expensive practice—but he was picking sprouts when his neighbours had nothing but bare fields to look at.

A lot of people these days think of building an ornamental pond of some description in the garden—then dismiss the idea, having realised the cost and the snags. With polythene as a lining it is a simple enough matter. The flexibility of the material makes it suitable for waterproofing ponds of any shape, and heavy gauge black polythene has an indefinite life as a pond lining providing it is not punctured. Severe cold and ice will not damage it in any way.

Polyrings are flexible sleeves made from black polythene. They can be used as bottomless pots for the ring-culture method of growing tomatoes, chrysanthemums, etc.

Polythene is a versatile material and its uses in the garden are many. You can use it as a protective cover for gardening machinery and tools, as winter protection for less hardy shrubs, for waterproofing leaky sheds and outhouses and for storing bulbs and fruit—in fact for all kinds of general protection. In the home it can provide you with a cheap form of roof insulation and is ideal as a packaging material for use in the fridge or as a clothes cover for protection from moths and dust. It also makes an excellent groundsheet or picnic tablecloth.

Polythene can solve many a difficulty in the garden. It is as useful as you make it. Vi-Plastics mail order system exists to serve the small gardener with the small problem. Its team of experts is ready to help with difficulties, and a detailed price and stock list is yours for the asking.



Dahlia, tomato and petunia plants growing in black polypots (above). A small pond (right) lined with heavyweight black film nearing completion. Strawberries (above, top) growing under a continuous plastic cloche (using sheet polythene) supported on wires. Note also the black mulching sheet underneath. Lettuce and roses (above, right and opposite page) growing through a mulch of black lightweight polythene sheeting







# ACCIDENT OR DESIGN?

Wallis Heath talks about recent happenings at The Kynoch Press

**I think that I shall never see  
A billboard lovely as a tree.  
Indeed, unless the billboards fall  
I'll never see a tree at all.**

—OGDEN NASH

Readers will be relieved to know that it is not our intention to worry Mr. Ogden Nash further, or to add to the confusion in the countryside, by entering the billboard business.

Nevertheless, speaking of trees—down in The Kynoch Press too something has

been stirring recently, as many people throughout the Company who have dealings with us have noticed.

For example, the "design essay" shown above was printed and published in July this year by the Press, as part of a broad plan to spread the gospel of good design as widely as we can.

These "essays in design," as we have called them for want of an established title, for they are something of a new departure in the realm of publicity, are not strictly advertisements but are in-

tended as visual communications to those already involved in the subject of graphic design, and their intention is to stimulate thought and interest in the interaction of design and printing.

It is the first of a series of such essays, which will appear quarterly. Each one will be the work of a leading graphic designer who will be free to express himself on a subject of his own choosing without any interference whatsoever. The results are certain to be exciting and a challenge also to the capabilities of The





Soldiers

**PEDIGREES**



LEFT: A double page spread from the first of the mailing shots, "Symbols of Quality"  
FAR LEFT: The inside front cover of booklet "M is for Medals," the second of the mailing shots



ABOVE: The medal-invitation sent to our clients inviting them to one of the series of receptions which were held in London, Birmingham and Leeds

LEFT: One of the exhibition modules which were used at the receptions. These modules, showing some of the work produced by The Kynoch Press during the past twelve months, were built up into a variety of patterns in each of the rooms used for the receptions

Kynoch Press as printers. But this is only part of a larger scheme for telling print users everywhere of the service in design and printing that the Press can give.

It all began in the spring, when we sent out to a wide circle of print users, advertising agents and designers, as well as our present customers, a booklet on "Symbols of Quality." Later, in a second booklet, we told them about our own "medals"—the cups and awards we had gained for design and printing.

Finally, we awarded a "medal" to each one on our list. This medal, commemorating the invention of printing by Gutenberg of Mainz, carried on the reverse side an invitation to a series of receptions at London, Birmingham and Leeds to view a display of design in print and to sip the Rhenish wine and nibble the delicacies of Mainz. And so we told our story.

Graphic design is constantly evolving: techniques modify and develop, but principles remain. Accepting this as true, The Kynoch Press is reaffirming its aim to produce the highest quality of print, firmly based on first-class design. And design can best be defined as communicating whatever is the message in the most effective way. It is not a matter of adding superficial arty-craftiness to a customer's "copy," but means being involved completely from the beginning with what is in the customer's mind and interpreting the whole message he wishes to communicate in graphic terms.

It does not matter if the subject is a glossy display of mannequins modelling 'Terylene' garments, or a catalogue of the sizes and shapes of metal tubes for the plumbing trade—each essentially consists of a message that must be conveyed clearly and completely to the potential user, and the designer starts right there with the fundamental facts and resolves the problem by creating an answer that is functional, aesthetically satisfying, and technically as economical as is required.

What are we seeking to achieve by all this? The Kynoch Press is solidly established on a worthy tradition; but tradition is of the past, and what one does in the present must be equally soundly based on the whole enterprise will wither. Now we aim not only to advance our reputation in the world of printing, but to align ourselves with those forces which in so many contexts are making the British public more design conscious than ever before.



# EXPLOSION SPECIALIST



From a pole on the hill a red flag fluttered. I was nearing the special testing ground used by Nobel Division's Research and Development Department for "heavy work." Heavy, I was to learn, meant a considerable explosion. The roadway led through brown sheep moors and behind me was the Firth of Clyde, set with the islands of the Cumbraes, Bute and Arran.

My interest point, however, was the flag and the side road that ran into the mouth of a small quarry, protected from intruders by sturdy steel meshes. Within men were busy, the scene resembling a miniature Cape Canaveral launching pad, although the vertical cylinder was no rocket but the critical part of a chemical plant in which the reaction gases might or might not go wild. Sensitive instruments were fitted near the bursting disc and at various points of the apparatus to record performance should the gases under pressure explode when a glowing energy source was switched on.

There I found Tom Brown, lean, alert and active, the technical officer who leads the Explosion Hazards Section that has its home in Nobel Division's Research and Development Department. This section, following a decision by ICI research managers in 1955, was established to give a service for the whole of ICI, and it will, when asked, examine explosion risks that can occur in all sorts of manufacturing processes and determine critical limits as an aid to safe operation.

Because of its long experience with explosives, Nobel Division had good testing sites and facilities for the necessary practical work, and it had the technical men who would deal respectfully with the potentially explosive circumstance without being overawed.

The test set up the day I was there was to measure the forces released when the gases in the vessel were exploded. Coloured circuit leads ran from many points of the reaction vessel to electronic recorders nearby, and longer cables

reached to a battery of piezo-electric recorders housed in a strong hut shielded from the business end of the experiment by the spur of the hill. Within the hut these gauges translated fluctuations of gas pressure into vibrating electric blue lines on the scanning screens of the instruments. Photographic records were also made, so when heat energy was passed into the gases and an explosion followed, the gauges recorded the circumstances, which could then be compared with the calculated expectation.

"Sometimes," said Tom Brown, "the experimental and the calculated answers are not the same," a fact he effectively illustrated in his Ardeer laboratories. A heavily ruptured pressure vessel stood in the corner of his room. "We were testing it to destruction point," he remarked, "only it happened sooner than expected. Let me show you the evidence in the case." He led me to a strong chamber closed with a heavy steel door. While experiments go on, nobody is in this room, but all information comes by cable to the instruments. Around the walls of the room the deep scars of damage could be seen. The Ardeer site has accommodation for small, medium and heavier explosions, but the heaviest are engineered and studied in the remote Fairlie Moor quarry.

Dedicated to tracking down explosion hazards, Mr. Brown explained the method. "We look at the problem, then apply the most extreme conditions—conditions that would be most unlikely ever to occur if the process ran wilder than wild. If there is explosion, we work back experimentally to fix safe limits, whether the substances are gases, liquids or solids."

He described much of the work as routine, a word I accepted with reservation, for Tom Brown—"a green-fingered experimenter"—is given to understatement. Dust experiments, for example, are routine to fix the limits of flammability. "Dust in air," he remarked, "is often an explosion risk. Remember how

often the Devil ran away with the medieval miller?" Here then was the explanation: as flour was milled, bagged and stored, the dust of flour filled the air in the windmill. Your cosy miller at the end of the day may have warmed himself before the open fire in his living quarters below. Flame could lick at the right dispersion of flour in the air, and disastrous explosion would be followed by fire.

Every year at the request of a number of Divisions the Explosion Hazards Section tests hundreds of dusts and grades them according to the degree of hazard. I watched the simplest of several tests performed. A canister fitted with a sieve bottom was held at the top of a wide vertical tube. The mechanism of an electric bell hammered on the side of the canister and into the tube fell fine dust until it was well suspended and dispersed in the air. We watched through a pane of armour glass. A switch was pressed to pass current through an element at the foot of the tube, and round that element was a short length of guncotton string to give a good "juicy" heat source. The contents of the tube "woofed" with a dust-in-air explosion, and yet another hazard was revealed, because the force of the first explosion raised from the canister a cloud of dust that also exploded.

In a coalmine when the vicious gas, firedamp, explodes, clouds of coal dust can be raised which in turn may explode from the firedamp heat source. The dust of salt, stone and many other substances will not explode when suspended in air. "But," said Mr. Brown, "where there are carbon compounds there's danger. That is why we do so many routine dust tests for the Divisions."

"A service section," he will repeat, "with a lot of routine." Technical men in many different parts of ICI will contradict this description of his work by a man who engineers and studies explosions so that others can be told of possible dangers and how to avoid them.



# The ICI Petrochemical and Polymer laboratory

by Duncan Davies

Dr. Brookman wrote an article in the last issue of the "Magazine" called "Research and Development—Why?"; he mentioned the setting up of our new Petrochemical and Polymer Laboratory, which came about largely because of some thought the ICI Board gave to the question "Research and Development—How?"

Some years ago a Manchester businessman, having decided to have some of "this research" in his firm, was telling his partner over morning coffee that their first research chemist had started that day at 8.30 a.m. "Well, Sam, we'd better go down and see what he's invented." "No, Joe, tha needs to take long view in these things. We'll give him till lunch." This, in a nutshell, is our problem. Research and development of the kind that leads ICI into new, profitable, million-pound business takes a long time: polythene, 'Perspex' and 'Terylene' did not begin to be commonplace items of everyday existence until well over ten years after their invention. This was not because of indolence, lack of support for research, or want of decision: it simply took this time to take a test-tube product, carry through the host of tests which established that it really did something exciting and new, and do the very hard-hitting chemistry and engineering necessary to provide methods for making it cheaply enough from raw materials cheaply accessible in large quantity. Money spent in this way is just as much of a capital investment as money spent on bigger and better plants for established products, like ammonia for fertilizers, and those of us who work in Research and Development in ICI have the responsibility to ensure that this investment leads to proper profits, just as a production department must ensure that their plants make such profits. Since ICI in this way invests nearly £20m. each year—or eightpence out of every pound paid to us by our customers—we cannot regard it as a minor matter concerning only a few specialists in a small back room. The pictures of our new laboratory, printed with this article, show that research in these days is done in the front parlour.

## The present ICI research pattern and the new departure

ICI already does its research in two ways. Some is done very near to the plant or near to the customer, and is concerned with making things a little cheaper, a little better, or a little more useful. The overall economic effects, however, are enormous: a penny a pound off a manufacturing cost may make the difference between being competitive or not, and a slight improvement in quality may take a product into a completely new use-field and create a big new market. By its very nature, however, such work cannot nor-

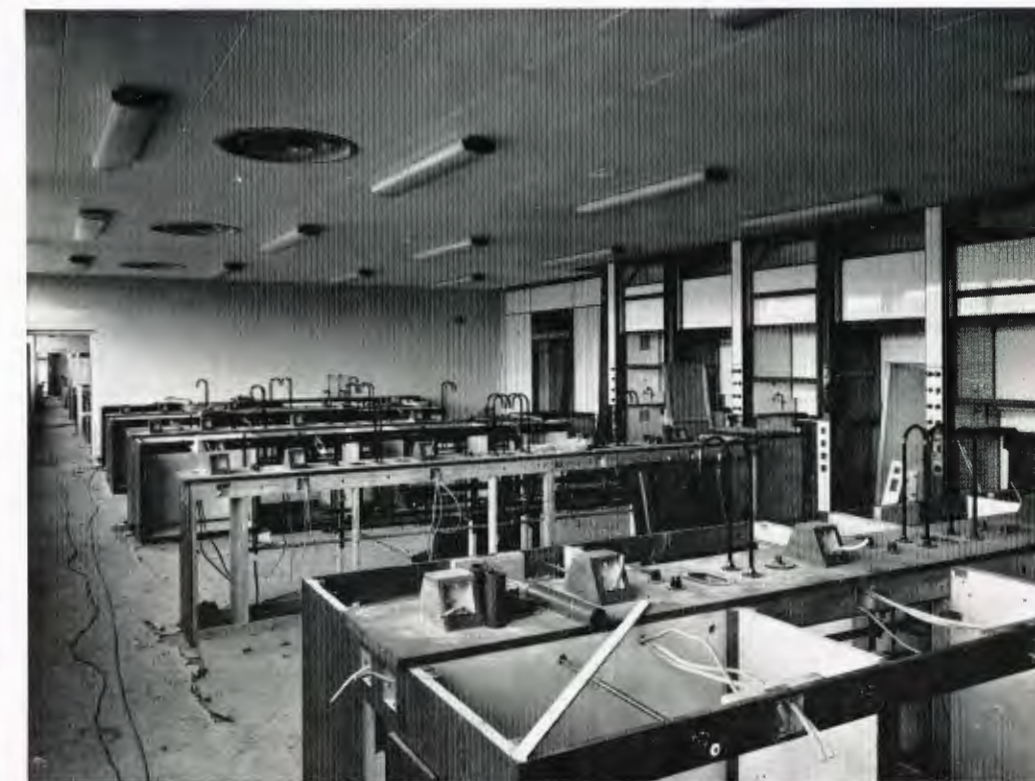
mally lead to totally new kinds of product. Invention of this kind is not done at the factories but at Division headquarters, where the skills of the Division are used to devise these exciting new products, as well as new processes, needing new plants, for existing products. In some cases this longer-range work leads in unexpected directions: it caused the forerunner of Nobel Division to become interested in paints and so lay the foundations of the Paints Division, and the forerunner of Billingham Division to work in the 1930s on making oil from coal and so to spearhead ICI's entry into petrochemicals and to found the Heavy Organic Chemicals Division. Much of this second type of research is thus concerned with diversification into new industries.

Just as the sum of the efforts of its factory and customer research does not represent the total contribution a Division can make to ICI's future, it is reasonable to suppose that the sum of Division work on new products, new processes, and diversification generally may not represent all that ICI can do. For example, a Division which is very busy because its production is expanding rapidly, and its products are finding many new uses, may have difficulty in sparing research effort for really new ventures, even though opportunity knocks insistently. We be-

lieve that this is the case now in the field of petrochemicals and polymers. Again, there may be some new area of interest which creates difficulties for ICI because it is on the fringe of the interest of several Divisions, no one of which, for various reasons, may be able to take the initiative. For these reasons a supplementary and mobile ICI reserve of Company research seems a reasonable concept. To recognise such a need implies neither criticism of Division research nor a monolithic central take-over bid for the whole of ICI longer-range research, often felt by chemists and physicists to be one of the most interesting parts of their job.

## The pattern of the new laboratory

The Petrochemical and Polymer Laboratory was set up to fill this gap. Of course, medium and longer range research cannot be turned on and off like a tap, and we cannot dash from Division table to Division table like an attentive waiter, providing a fork here, bread there, and drink somewhere else. We are taking our place as a unit about as big as a Division research department—100 or so professional scientists, with rather more than twice that number of helpers, and with a research programme and policy of our own. In this way we shall make up about 5% of ICI's total R. & D.—a useful but



*A view of one of the laboratories in the course of construction*





The new laboratories from the ground

not overwhelming proportion. The original suggestion that the laboratory should be set up came from the Research Directors of the Group C Divisions—Fibres, Plastics and Heavy Organic Chemicals—and so it is very appropriate that the Steering Committee which advises on our planning includes these Directors, together with those of the Dyestuffs and General Chemicals Divisions. We constantly discuss results and policy with research people in all the Divisions and make sure that we have their support.

A further advantage of across-the-Company research is that it should sometimes be more economical. A new polymer may find uses as a textile fibre, as a plastic, or as a surface coating material. It is therefore possible that one piece of chemical research may support several pieces of development for different end-uses. Although such co-ordination can be and is already arranged in some Divisional research, it will be more easily and readily arranged between people working in a single organisation on a single site.

#### Our progress to date

As most people now know, the new laboratory is being built alongside the new General Chemicals Division laboratories at Runcorn Heath in Cheshire. In fact, that Division are very generously giving us one of the blocks which they had planned for themselves and accepting in return an identical extra block to be completed six months later; in this way we have been able to bring forward the date of assembling our staff in one place to January 1964. By that time we shall have engaged about fifty professional scientists

(or about half of our final complement). Forty of these (mainly chemists) will be housed at Runcorn, and about half of these forty will already have been working in borrowed accommodation, at Winnington, Blackley, Harrogate or Billingham, for about twelve months, so that they have had a chance of training themselves in the special skills needed for our initially chosen projects. The remaining ten or so will be seconded to Division Research Departments for about two years as part of a general scheme whereby a fair proportion of our staff are to have a period in which they will get to know Division problems before they join us. It takes about 5-7 years to make an effective contribution to longer-range research, and after such a period most of our staff will leave us and spend the larger part of the remainder of their careers in Division organisations. By this means the new laboratory will, we hope, be always staffed mainly by young men whose period of university training is relatively recent. There will have to be a kind of Praetorian Guard of permanent staff, and all these people will be of the very highest attainments and ability. I have emphasised the closeness of our contacts with the rest of ICI, and I must also mention the platitude that science knows no frontiers, and that part of our job is to keep a very close watch on developments in Western Europe, in America and in Japan. Although much of our skill will be directed towards new inventions, we cannot possibly be the only people in the world making them and we shall seek opportunities to emulate Fibres Division's great success with 'Terylene' and from

time to time to participate in the exploitation of leads found elsewhere.

We believe that we shall gain greatly by having our lunches, as we shall, among the economic planners, engineers and salesmen of the big new heavy chemical division in the north-west, because in this way there will be no chance of our being unaware of the realities of the industrial scene. Inventions very often arise from chance observations, and lack of awareness could lead to a crucial experimental result passing unnoticed. Our situation alongside our Research and Development colleagues in the Division will enable us to share many facilities with them and thus to make better use of ICI's research investment. Our big brother, however, will have no more say than the rest of the ICI Divisions in the work which we do, and we are sure that we shall be able to enjoy all of these various advantages without adopting a distorted and one-sided view of ICI's needs. It would certainly have been absurd to site ourselves away from the rest of the Company, in pursuit of demonstrable impartiality. Most of ICI's capital assets, and the key native raw materials, are all in the north of England, and it is therefore most appropriate for the Company Research Laboratory to be in the north.

#### The future

The final point to emphasise is that while our inventions will be exploited by ICI Divisions we have a responsibility to undertake a clear demonstration of their value before we try to pass them on. This means that products in which we believe may often have to be produced in quite appreciable quantities—perhaps hundred-weights—and evaluated in suitable end-uses within our own organisation. Development, including the basic study of use properties, may well account for about half of our work. We shall gain considerably from having this done on our own site because new ideas should come just as often from the study of applications as from the study of chemistry. Our researchers and developers will be constant visitors to each other's laboratories, and each project, instead of being a rigid attempt to make a particular type of material, will evolve as time goes on. Instead of being like an artillery shell it will be more like a homing missile, and we hope from time to time while shooting at a sparrow to finish up by bringing down an eagle.

# PEOPLE & EVENTS

**Mr. S. P. Chambers**, ICI Chairman, has been elected to the newly created position of President of the British Shippers' Council, the body formed in 1955 to further and protect the interests of British importers and exporters on matters of major policy. The Chairman is also one of the two industrial members of the Government Shipping Advisory Panel.

The British Shippers' Council has made its influence felt in many ways in the past few years, expressing forceful views on the need for port improvements, urging a National Port Authority, pressing for greater representation of users on Dock Boards, actively seeking the simplification of documentation including bills of lading, and helping in the setting up of shippers' councils in Continental countries.

#### Expansion in Malaya

ICI (Malaya) Ltd. has been granted a pioneer certificate by the Malayan Government to build large scale chemical plants in the Federation. A new company is being formed for this purpose, to be called the Chemical Company of Malaysia Ltd. Fifty per cent of the \$30,000,000 issued share capital of the new company will be raised locally.

The main plant will produce a new type of granular compound fertilizer, specially formulated by ICI for Malaya's rubber and palm oil industries. The second plant will make caustic soda, which has many outlets in local industry, and chlorine, which is increasingly used in Malaya, Singapore and adjacent territories, for the purification of public water supplies and as an industrial bleaching agent.

A third project, in the planning stage, is a plant to make industrial explosives for mining and quarrying. It would draw its main raw materials from the fertilizer plant and other local sources.

Design work on the plants, to be situated in Selangor, is already well advanced. ICI technical experts will supervise the building and start-up. The three plants will employ between 450 and 500 Malayan personnel.



**World record.** Mrs. Madeleine Cobb (right), who works in Head Office Staff Department, was a member of the British team which set up a new world record for the women's 4 x 110 yards relay at the White City on 5th August with a time of 45.2 sec. The other members of the team were Miss Daphne Arden, Mrs. Mary Rand (seen taking over the baton from Mrs. Cobb) and Miss Dorothy Hyman.

#### A pioneer of Wilton and Severnside

**Dr. H. S. Hirst**, who retired at the end of September after 37 years' service, has had the unique distinction of being a member of the original teams which selected the sites and did the early planning for both of ICI's major post-war development projects—Wilton and Severnside.

He started his Company career in 1926 at Billingham with Synthetic Ammonia & Nitrates Ltd. (forerunner of the Billingham Division) as a chemist on the first ammonia unit that was built at Billingham. In 1931 he was appointed Deputy Works Manager of Cassel Works, and then Deputy Works Manager of Gaskell Marsh Works at Widnes. In 1934 he became General Chemicals Division's Deputy Development Manager and in 1939 was appointed Mana-



Dr. Hirst

ger of a Special Products Section at Runcorn.

During the war years, Dr. Hirst was for two years manager of the Government shadow factory at Valley in North Wales, and then went to the Ministry of Supply as

Director of Chemical Defence.

On his return to the Company in 1945 he became associated with the Wilton project and was Wilton Works Manager until 1947, when he returned to Billingham for special duty as personal assistant to Dr. (now Lord) Fleck on matters concerning Scottish Agricultural Industries.

In 1949, he was appointed Deputy Manager of Billingham Division Technical Department, and in 1953 after a year on special duties connected with the design and building of the Works of the United Sulphuric Acid Corporation at Widnes, became Technical Department Manager. His appointment as the Severnside General Manager was announced in 1957. In 1958 he became a member of the Wilton Council, which was responsible for Wilton and Severnside, and in 1962 he



joined the Board of the Billingham Division.

Dr. Hirst is retiring to Ferndown in Dorset but as a part-time member of the South Western Gas Board—a new post he has just taken on—he will still be retaining some links with industry in the West Country.

As becomes a St. Andrews graduate, Dr. Hirst is a distinguished golfer. He played to scratch for over 20 years, and it was only pressure of work that limited this period. He has played for Lancashire and Yorkshire, and he was in the last eight in the English Amateur Championship in 1939.

#### New Italian company

As another step in its policy of European development, ICI has formed a new subsidiary company in Italy to be known as Imperial Chemical Industries (Italia) SpA.

The first purpose of the company is to supervise the operation of a small plant at Rosignano on the West Coast of Italy to manufacture 'Cereclor,' used widely in the process of making rigid pvc flexible, and in paints and adhesives manufacture to reduce inflammability. The Rosignano site has been selected because of its convenience for supplying the Italian market. The plant is expected to come into operation later in the year.

#### Small world

The old saying about it being a small world is a hackneyed one, but the following coincidence prompts its repetition. **Dr. Ted Jones**, assistant to the Overseas Technical Manager of Fibres Division, was recently on an airport bus on his way to Malta when he got into conversation with a dynamic South American, not knowing who he was. Two months later in Sao Paulo they met again on Company business when his airport acquaintance turned out to be the president of ICI Brazil.

#### A sticky job for plastics

In the feature on Plastics Division's Development House on page 174 the use of plastic coatings on the walls, ceilings and roof is described. It is a far cry from the buildings of today to those of Roman Britain, but the PVC copolymers that are used to protect today's walls, ceilings and roofs are also being used to preserve for posterity the mosaic pavements of the buildings of nearly 2000 years ago.



**Moving a mosaic pavement.** The method involves the application of 'Corvic' vinyl chloride copolymer solution to the pavement to bind the individual tesserae together (above),

then the bonding of a cotton bandage to the surface and finally the undercutting and raising of the pavement ready for transport (right). (See A sticky job for plastics.)



#### Technical information unit

The number of reports on research, development and other technical work within ICI produced in any one year runs into thousands. In order therefore to give technical and scientific staff easier and more complete access to previous work done within the Company on any particular project, a Central Technical Information Unit is being set up. The new organisation will have the responsibility of coordinating the indexing of scientific and technological information throughout the Company.

The head of the new organisation is **Dr. William Batten**, who is well known to those concerned with technical information problems as the originator of the "Batten" punch card system. Dr. Batten joined ICI at Billingham in 1934 and transferred to Plastics Division in 1939. In 1940 he moved south to Plastics Division headquarters and was involved in patents and intelligence work. After some time in the Division Technical Department, where he was assistant manager, he was appointed manager of the Division Techno-Commercial Department in 1953.

At first Dr. Batten is working at Millbank, but it is expected that in due course the Unit will go outside London.

August to take up a post at the Royal Institution as part of a team working under Sir Laurence Bragg. The work of the group Dr. Bunn has joined was featured on BBC television some months ago in a programme on the Nobel Prize winners who form part of the group. Dr. Bunn is retiring early on pension to take up this pure scientific research. "For some years I have wished to go into this on retirement, and I am taking advantage of the chance of retiring early recently offered by the Company," he explained. Dr. Bunn said he would still be working on polymers, but these would be natural polymers, involved in a study of the molecular basis of life.

Dr. Bunn, who joined Alkali Division in 1927, holds BA, BSc, MA and DSc degrees of Oxford University. He is a member of the Faraday Society, and Fellow of the Chemical Society, and a Fellow of the Institute of Physics and the Physical Society. He transferred to the Plastics Division Research Department in 1946 and at the time of his retirement he was leader of the physics section.



Dr. Bunn



Dr. Batten



Off-shore drilling for salt on Tees-side



**Schools cricket international.** (left to right) Mr. C. R. Hanford, secretary of the English Schools Cricket Association, Mr. Freddie Brown, former England Captain and President of the English Schools Cricket Association, Clive Hulme, of King's School, Chester, who played for the English team and who is the son of Mr. Tom Hulme of Alkali Division, and Mr. Trevor Gibson, the Winnington Park groundsmen.



"Endeavour" prizewinners with Sir Eric Ashby

#### Search for salt

The salt deposits of the Tees-side area were discovered exactly 100 years ago when a borehole, being sunk to discover a supply of fresh water for a Middlesbrough iron-works, penetrated a bed of rock salt at a depth of 1200 feet. Since that time more than 200 wells have been sunk, mostly on the north bank of the Tees, to exploit this salt.

General Chemicals Division have the rights to a large area of the salt field but ever increasing rates of extraction during the past thirty years have resulted in large areas of the field being worked out. At the same time exploration boreholes in other parts of the field have shown that there are large variations in the thickness of the bed and some areas will not be suitable for economical exploitation.

The area of the salt bed of which ICI has the least knowledge is the part which lies under the tidal estuary of the Tees and so, to increase information on future reserves, Cassel Works have recently sunk an exploratory borehole on the tidal mud-flats. It might almost be called our first attempt at off-shore drilling, as the rig is located some 300 yards beyond the sea wall which holds back the sea from the present working brinefield. It is on an "island" which was constructed with its surface above high tide level but which is cut off from the shore for periods of up to two hours each tide.

#### "Endeavour" prizewinners

At the annual meeting of the British Association for the Advancement of Science, this year held in Aberdeen, prizes for the ICI-sponsored *Endeavour* Essay Competition were presented by Sir Eric Ashby, FRS, President of the Association, on 29th August. The competition, which is open to both home and overseas contestants, is limited to those under 25 and is designed to stimulate the interest of young scientists in the work of the British Association and to encourage a higher standard of writing in scientific work. The prizewinners seen here with Sir Eric (second from left) are (left to right) Michael Walker (1st prize), Edward Biffin (2nd prize), William Slatcher (3rd prize, and last year's 2nd prizewinner) and Ian Campbell (one of the two winners of special prizes awarded to those under 18). Mr. Slatcher is incidentally the first contestant ever to win two *Endeavour* prizes.





**Antarctic Research Expedition.** ICI and ICIANZ explosives and detonators were used by the Australian National Research Expedition from Wilkes to the Russian station at Vostock and back. The

journey took four months and covered 1800 miles. Seismic shots were fired every 30 miles from holes drilled to a depth of 240 ft. to determine ice thickness. During much of the time the party travelled on ice at



9000-12,000 ft. above sea level. At one point the ice was 16,000 ft. deep. Left: The midnight sun shines during drilling operations. Above: Firing cables fly upward as a seismic shot is fired from a depth of 240 ft.

#### An end to spud-bashing?

Once upon a time peeling potatoes in quantity, or "spud bashing" as it is known in the army, used to be a laborious task for groups of unfortunate individuals using knives. Then came the machines that peeled by abrasion. A comparatively new development that is of particular interest to Alkali Division is the peeling of potatoes with caustic soda lye—a solution of caustic soda in water.



Although this method of peeling vegetables and fruit has advanced much farther in the United States than in this country, it is never likely to be the answer to the housewife's prayer as she stands at the kitchen sink preparing dinner. But for organisations that go in for peeling vegetables and fruit in a really big way—manufacturers of pre-cooked foods, canners and the like—peeling with caustic lye can cut the wastage by up to 25 per cent compared with peeling by abrasion machinery.

Caustic lye peeling in itself is not new. Most Californian peaches have been lye-peeled for many years. In all cases where this method is used the fruit or vegetables are washed completely clean of caustic so that there is no trace of it in the food that we eat.

#### Para-xylene plant commissioned

A new para-xylene plant with a capacity of 60,000 tons per year has been commissioned by the Heavy Organic Chemicals Division at Wilton, bringing the total para-xylene capacity at Wilton up to 85,000 tons per year.

Para-xylene is, with ethylene glycol, the basic raw material for 'Terylene' polyester fibre manufacture. The new plant is designed to meet the continually expanding demand for para-xylene for 'Terylene' production in Britain and the demand from licensees using ICI's polyester fibre process in other countries.



HOC Division's new para-xylene plant at Wilton

"An injury is much sooner forgotten than an insult."  
—Lord Chesterfield.  
Dressed Highlanders at the Braemar Games in reverse.  
The Magazine tenders apology to all those whose susceptibility is affronted by printing Mr. J. Macdonough's fine photograph of Best



**Paris fashions.** 'Terylene' again proved a favourite with the top Paris designers. Above: A covetable classic evening dress in honey-coloured 'Crimplene' jersey by Louis Féraud. The finely tucked bodice is cut high in front with the back deeply scooped out to waist level.

#### Retirement of Mr. K. G. Begg

##### Mr. M. J. S. Clapham, ICI Overseas Director responsible for Australian affairs, writes:

Ken Begg's retirement from the chairmanship of ICIANZ at the end of October this year marks, as few men's retirements do, the end of an epoch. By the standards of service in ICI and its subsidiaries, his 23 years is not a long time: but in terms of the change that has occurred in his company, and in his country's economy, few men can look back on a greater transformation, or on a greater personal contribution to it.

In 1940, when ICIANZ acquired the very successful merchanting business which Ken Begg had established in New Zealand, and appointed him its chief executive there, the selling of imported products, mostly from ICI, was the biggest part of ICIANZ's business; and his evident talents in the field made his appointment as commercial director of ICIANZ, in 1946, an obvious step. Meanwhile, however, the exigencies of war in a developing country, now isolated from its traditional sources of supply, had stimulated industrialisation, and the demands which it made on the chemical industry called for qualities far beyond those needed for a predominantly commercial organisation. That Ken Begg possessed them is shown not merely by his appointment as Chairman and Managing Director of ICIANZ in 1952, but far more by his remarkable achievement in guiding his company into a leading position as a manufacturer in a rapidly developing industrial economy.

In building up a new chemical industry, the knowledge and resources of the ICI Group are such powerful tools that it is easy, from a distance of 12,000 miles, to underrate the ability that is required to use them; to find and lead the strong team of men with technical knowledge leavened by commercial and financial under-

standing which is needed to decide priorities and to match new projects to the needs and opportunities of a country in the dynamic stage of industrial take-off. Those of us who know him and have seen him at work realise how hard such a task is, and how much of the unquestioned success of its performance is Ken Begg's own.

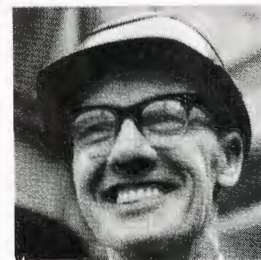
A quiet but resolute man, one who has consistently avoided publicity yet become a power in the public life of his state and his country, a citizen of the world born and educated in Melbourne, he typifies many qualities which have given Australia a position in the world disproportionate to her population and resources. On the one hand, he has had the willingness to learn and accept what is good in a longer-established organisation; on the other, the independence to reject what is not applicable in different circumstances, and to assert the rights and proper aspirations of the large body of Australian stockholders against the friendly and well-meaning but occasionally insular views of the parent company. At the same time, his personal friendliness and sincerity have enabled him to build up at every level between ICI and ICIANZ bonds of friendship and mutual confidence which have resulted in each getting the most possible help from the other.

Dominating Melbourne from its central hill, ICI House is an enduring tribute to the man who played so large a part in commissioning its design and whose interest in painting and sculpture determined that Australian artists should contribute to what is probably both the most splendid and efficient office block in the ICI Group of companies. To his many friends in these companies, and above all to the much greater number employed in ICIANZ and its subsidiary companies who have worked under his leadership and learned to appreciate both his ability and his warm humanity, it will seem one of the less important of his memorials.

#### 50 YEARS' SERVICE



Mr. T. Arnold (Alkali)  
18th August



Mr. T. N. Davies (Alkali)  
21st July



Mr. F. Hassall (Alkali)  
15th August



Mr. S. Salt (Alkali)  
15th August



Mr. F. Dodd (Nobel)  
25th August





**Bulk transport of nitric acid.** Nobel Division has started the regular despatch of nitric acid in bulk to a customer in Northern Ireland—the first time that nitric acid has been transported in bulk by sea. Specially designed aluminium tanks are being used. In our picture, taken at Ardrossan Harbour, a full tank can be seen on the left while a returned empty is being swung to a waiting articulated vehicle on the dockside.

#### Retirements

Some recent announcements of retirements include:

**Alkali Division:** Mr. A. B. Dewar, Construction Works Manager (retired 31st July); Mr. J. W. Gibb, Joint Managing Director (retired 31st August); Mr. F. M. Joscelyne, Division Chief Engineer (retired 31st July). **Plastics Division:** Mr. H. J. Bull, General Works Manager (retired 30th September).



#### OBITUARY

##### Mr. P. A. Smith

It is announced with deep regret that Mr. P. A. Smith, who at the time of his retirement in 1960 was Chairman of Pharmaceuticals Division, died suddenly on 8th August. He was 64.

##### Mr. E. D. Carey, Northern Regional Manager writes:

"PA" retired in March 1960 as Chairman of the Pharmaceuticals Division after 38 years' service with the Company and its predecessors. Philip Smith was a Yorkshireman, educated at King Edward VII School, Sheffield, and St. John's College, Oxford, where he read Natural Sciences, obtaining a 1st Class Honours degree; this after service as a gunner in France in the '14-'18 war.

During his career with the Company at Billingham; in the Australasian Department; with the Home Sales Organisation (he was in fact the first Northern Regional Manager and played a personal and prominent part in the setting up of the Regional Organisation), and as Managing Director of the Dyestuffs Division as well as Chairman of the Pharmaceuticals Division, "PA" made a host of friends at all levels who not only had regard for him but faith in him as well.

In his career, which covered so many aspects of the Company's business, it is difficult to single out any one particular period, but I think that his biggest contribution to the Company was during the time he was associated with the

Pharmaceuticals Division. This Division owes much to his effort, inspiration and leadership, when he was in command during the early years of ICI's venture into this field of endeavour.

Philip Smith, whom I knew for 30 years, was loved and respected by all his staff and by all who had served under him at any time; he was a "man's man," and whatever ship he commanded was a happy ship in every sense of the word.

A great sportsman, he loved in particular shooting and cricket but was prepared to put his hand also and with competence to golf and tennis.

A speech from "PA" was a joy to hear: it was clear; it was fluent; it was well informed. It always sounded impromptu, but actually he always put a great deal of thought into the preparation of his speeches.

I will conclude by saying that Philip Smith acquired to a greater degree than most the loyalty and support—I would say even the devotion—of all who served with him in this Company of ours.

##### Mr. R. M. Winter

It is announced with deep regret that Mr. R. M. Winter, who at the time of his retirement in 1958 was the Company's Research Controller, died on 7th June. He was 66.

##### Lord Fleck writes:

Although he was born in Scotland, we who worked with him in the early days of ICI regarded Winter

as a New Zealander. Coldstream on the Tweed was in fact his birthplace, but at an early age his parents, and he with them, emigrated to New Zealand. Those who have visited New Zealand usually come away with some very distinct images of that country; kind in its personal dealing, impressive in its scenery, socially progressive, yet with it all nothing flashy, but steady rather as respects its forward-looking activities. Winter could be described as summing up in his person and typifying in his methods the characteristics of the land where he had been brought up and educated.

He received his University education at Auckland and, if my memory is correct, won an '1851 Exhibition' scholarship to this country, which enabled him to study at Imperial College. He did some work at Rothamsted, but it was the experience he gained during his sojourn at Woolwich War Office Research Establishment in the mid-1920's which influenced his work when he joined us at Billingham in 1928.

At that time, we were forming a section of Billingham to develop products derived electrolytically from the north-east coast salt deposits, and Winter was allotted to me as a research man. Thus began our association which lasted in an intimate way for the best part of ten years.

In 1931 both of us moved to Liverpool, to work with the

developing General Chemicals Division.

Winter was an excellent colleague. As Chairman of the sectional organisation, I was always kept well informed by him of what was going on in the research field. He was a bit senior to most of his own staff and when they were fired with enthusiasm for some bright idea he would bring them along to my room and let them expound what they were after. At the end of the day his solid, critical faculty would be brought into operation and we would arrive at a sound, rather than a brilliant, decision on the matter at issue.

He was good at finance figures also, and his estimates always had a ring of reality about them which was a very considerable asset to the whole organisation.

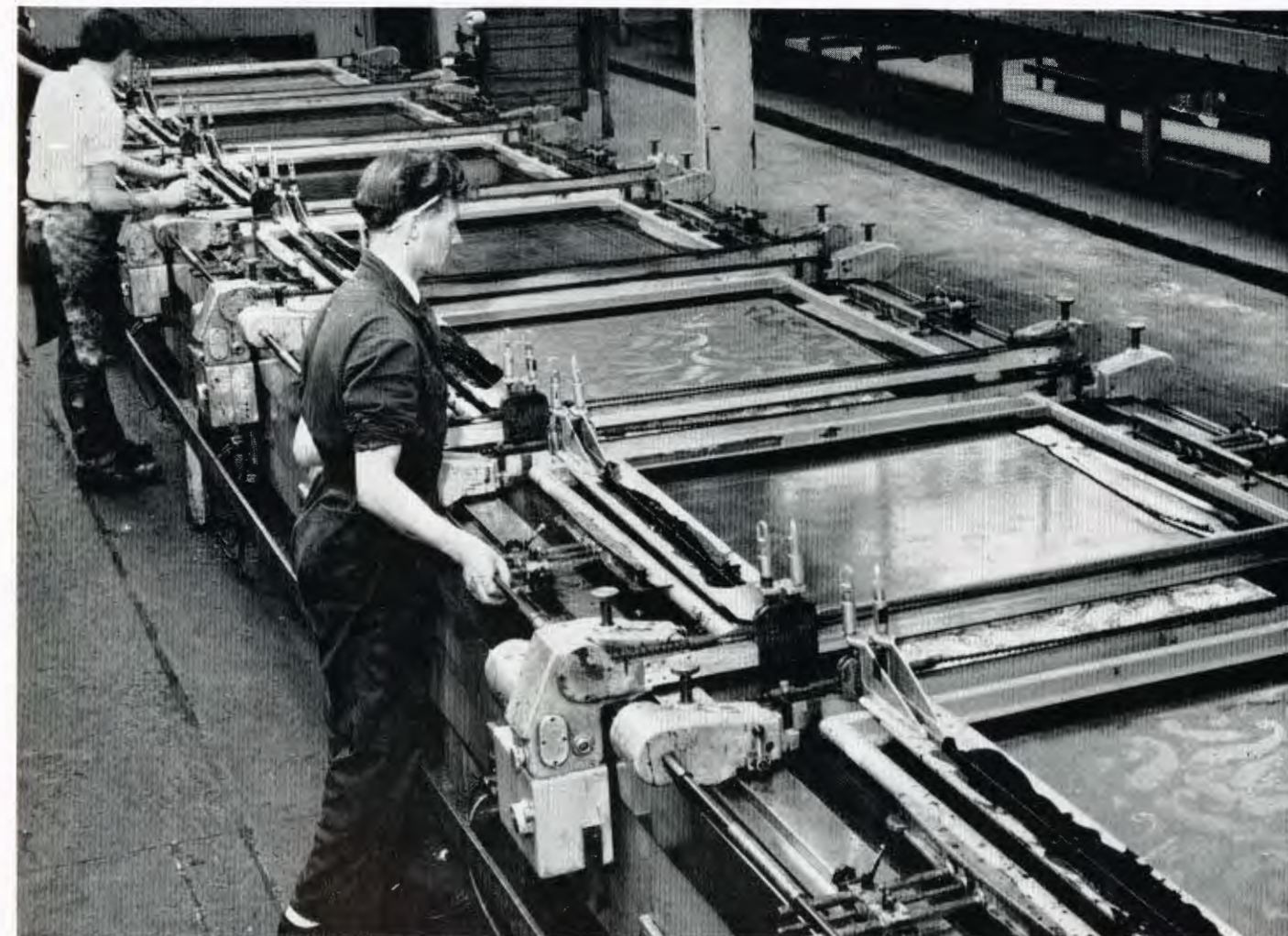
After that close collaboration, our paths began to deviate somewhat, he moving to the work of the Research Control Department in London while I returned to Billingham.

If I may sum him up, he was kind and stable, reliable with a finely balanced degree of venturesomeness, and altogether a most excellent colleague. I look back on my years with him as a very happy and fruitful period in ICI. Throughout the whole period of his work, he gave our Company, in his tactful and helpful way, the benefit of his wisdom and it gained much profit from his wise and shrewd judgment.

This is the first in a series of articles which the "Magazine" hopes to publish dealing with the contributions made by ICI to some of the principal industries in Britain.

# OUR CUSTOMERS IN BRITAIN THE TEXTILE INDUSTRY

by Michael Danckwerts



Mechanical screen printing. (Calico Printers' Association Ltd.)

No one knows exactly when or where textiles—that is to say, woven materials—were invented. A few shreds of material from primitive lake dwellings and Egyptian settlements are all the evidence we have. But it points to the fact that the brilliant idea of interlacing animal or vegetable fibres to form a cloth that would keep off rain and sun occurred to someone, somewhere, at least 7000 years ago and probably very much earlier.

Almost from the earliest times, textile makers have used chemicals to help them. At first they were not factory-made products, of course, but chemicals all the same: soda ash and potash for detergents, fullers earth and lye for cleaning, alum as a mordant, dyes made from animals or from plants. As the centuries rolled by, requirements became more sophisticated until, in the 19th century, a large part of the chemical industry was organised

entirely for the benefit of its textile customers.

Today the textile and chemical industries are still very closely linked. ICI is a most important supplier to the British textile and clothing trades; we sell them over £50m. of our products in a year. This makes them second only to the agricultural industry as customers for ICI products.

What sort of products do they buy 165



from us? The range is enormous, and to catalogue all the chemicals that are needed to turn wool off the sheep's back or cotton from a Carolina field into cloth and clothes would need several pages of the *Magazine*. But it is worth taking a quick look at ICI's contribution to this industry—the third most important in Britain.

If you consider the Divisions in order of their dependence on textiles, Fibres Division head the list because practically all their 'Terylene' polyester fibre goes direct to this industry—mostly to cotton and wool processors. Everyone must by now know from personal experience what a big part 'Terylene' plays in clothing the modern family, from the baby in its rompers to the head of the household in his new mid-weight suit. And a great deal of 'Terylene' is used for industrial textiles, such as conveyor belting.

Such things as 'Terylene' ties, shirts and lawn dresses are made by the cotton side of the industry; suits, trousers, skirts and uniforms by the worsted spinners; and skirts, sweaters, socks and lingerie by the knitters. Other specialists use 'Terylene' to make blankets, pillows and quilts, ropes and nets. 'Ultron' polypropylene is a comparative newcomer, but shows tremendous promise and is already going well in ropes, nets and blankets.

Dyestuffs Division does more than two-thirds of its domestic business with textile manufacturers. It may seem odd that this old-established Division, which put British dyestuffs on their feet and rose to fame by services rendered to the cotton and wool side of the industry, should now depend for half of its total home sales on synthetic fibre manufacturers: odd, that is, until one remembers that the giant British Nylon Spinners concern depends entirely for its output on those little ivory-white chips of nylon polymer that come from Dyestuffs Division's factories at Billingham and Wilton.

Cotton and wool processors take the next largest share of the Division's output. Out of the mere handful of what might be called 'front line' dyestuffs discoveries in the last forty years or so, six have come from Dyestuffs Division or its immediate predecessors. These dyes—such as 'Caledon' Jade Green, 'Monastrol' Blue, and, latest of all, 'Procion' fibre-reactive dyes—do steady good business: practically every piece of cotton, wool, rayon, linen or synthetic fibre goes through a dye-bath

sooner or later in its journey to the shops. A great deal of useful bread-and-butter is also earned by the long list of highly technical products needed in various aspects of 'finishing' textiles. They include special detergents, anti-mildew chemicals, resins for stiffening and crease-resistance, fluorescent whitening agents, anti-static treatments and lubricants. Out

#### ICI GROUP HOME SALES—1962

Consuming Industry	Value of Sales £m.	% of Total
AGRICULTURE	62.8	20
TEXTILES	52.3	17
ENGINEERING (less Motor & Aircraft)	28.3	9
CHEMICALS	24.9	8
BUILDING TRADES	17.9	6
MOTOR AND AIRCRAFT	14.1	5
PLASTICS	14.0	5
MINERAL OIL REFINING	8.2	3
MINES AND QUARRIES	8.0	3
GOVERNMENT DEPART- MENTS AND PUBLIC AUTHORITIES	6.6	2
GLASS AND CERAMICS	5.9	2
PAPER AND PAPERBOARD	4.9	1
ALL OTHER TRADES (including Chemical Merchants and other wholesalers)	60.2	19
<b>TOTAL</b>	<b>308.1</b>	<b>100</b>

of the 6,000 products in the Dyestuffs Division catalogue, in fact, the great majority go to textile and clothing manufacturers.

Alkali and General Chemicals Divisions have strong ties with rayon producers. To make viscose rayon, wood pulp or cotton linters are treated with caustic soda, while methylene chloride is needed in making acetate rayon. Day in and day out, throughout the year, tanker-loads of these chemicals leave the works for rayon factories up and down the country.

General Chemicals Division also has an interest in one of the newest families of synthetic fibres—the acrylics, such as 'Courtelle' and 'Acrilan,' (from 1965 onwards, however, the raw material acrylonitrile will be made by Border Chemicals Limited, the new company which ICI, BP and Distillers have formed to establish at Grangemouth in Scotland).

All told, General Chemicals Division owes one-sixth of its turnover to the textile industry.

Among other important products are 'Lightning' zips for everything from slacks to swimsuits, produced by Imperial Metal Industries. Silicones from Nobel Division help dyers achieve the best results and are the basis of many water-repellent treatments. 'Topane' fungicide from Heavy Organic Chemicals Division keeps carpet backings free of mould. Salt from Alkali Division is used in dyeing, and sodium carbonate for scouring wool. PVC from Plastics Division is used to coat cloth for protective clothing. And a great amount of business going on between the Divisions is concerned with textiles. H.O.C., for example, sells ethylene glycol, paraxylene and propylene to Fibres Division, who make them into 'Terylene' and 'Ultron.' Dyestuffs Division buy raw materials for nylon from Billingham Division.

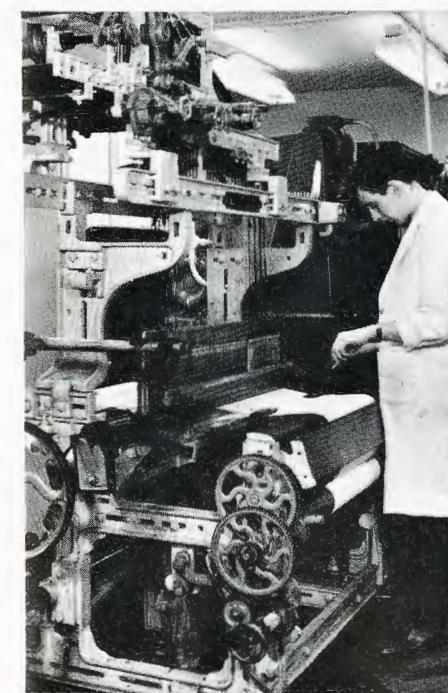
The intangible asset "goodwill" does not figure in the rendering of our accounts. But the goodwill built up between the ICI Divisions and their customers simply cannot be ignored. An army of technical service specialists in Dyestuffs Division, for example, study customers' problems with minute care and issue a flood of literature about almost every facet of textile dyeing and finishing. Often they actually dictate the pace of events by making available—free—completely new processes, such as the 'Procion'-Resin process for simultaneously giving textiles colour and crease-resistance, and the new 'Daltoflex' system for combining foam and fabric to give a superior version of the up-and-coming foambacks. Fibres Division—although 'Terylene' has long since been accepted by the textile industry—keeps up its advisory service and a flow of new ideas to all the different specialists who handle the fibre on its way to the retail customer; combers, dyers, recombers, spinners, weavers, finishers, garment makers—even shop-keepers themselves.

The textile and clothing industries, then, are good customers for chemicals. Will they become even better?

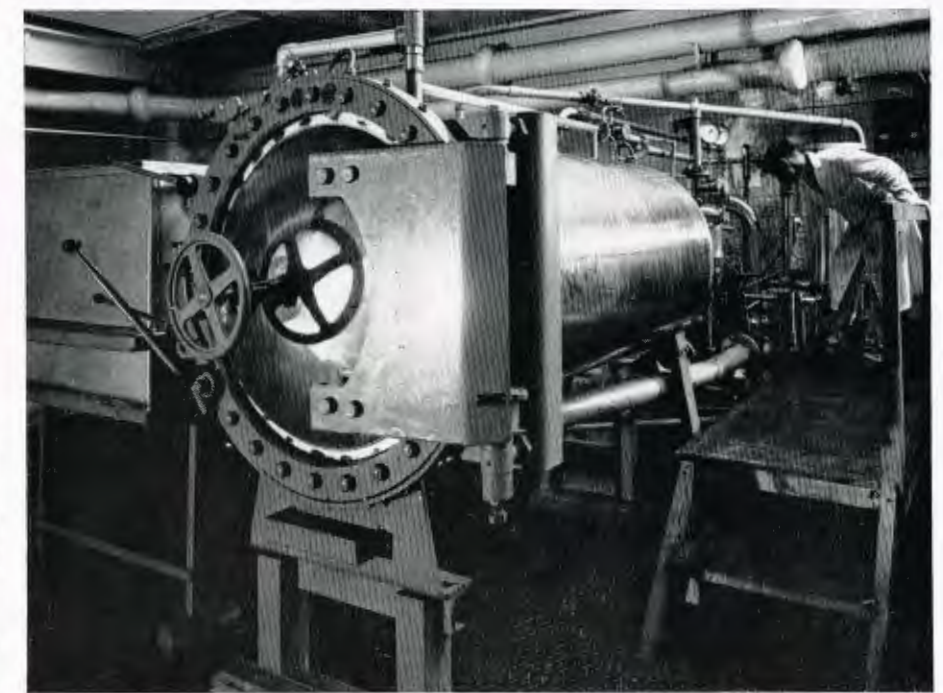
In the cautious words of the economic experts, "it seems not unreasonable to assume so." The value of ICI sales to these customers has risen by 12% a year between 1950 and 1962. During that time, UK textile production as a whole has



Chadkirk Mills. Inspecting lengths of 'Terylene' cloth



'Terylene' cotton fabric being woven on a Lancashire loom



Chadkirk Mills. Beam dyeing machine for the pressure dyeing of lightweight 'Terylene' fabrics. (Calico Printers' Association Ltd.)

fallen, so that ICI has been taking a larger share of the market. Most of the increase in sales can be attributed to newer products, such as nylon polymer and 'Terylene,' sales of which increased by four times in value between 1950 and 1956, and by another three times between 1956 and 1962. Britain's appetite for nylon and 'Terylene' is far from sated yet,

and 'Ultron,' with its unique combination of properties, will obviously earn more and more as it gets into its stride.

To put it in a nutshell, both ICI and the textile industry depend on each other much more than they used to. In the production and spinning of man-made fibres alone, ICI already has something like £100m. invested. An example of our con-

fidence in their future was the announcement early this year that we were going to spend £10m. on extensions to our nylon polymer production at Wilton and Billingham. The fact that ICI and Courtaulds recently found it worthwhile to back English Sewing Cotton in a takeover bid is another example of how this mutual dependence is growing.



# Another kind of SHOP FLOOR

by Marjorie Hock

I have never liked cabbages—neither the edible variety nor their human counterparts, the people who sit tight in a secure job risking nothing, daring nothing, waiting for the world to knock at their door. Give me, every time, the people who go out and challenge the world, who turn their back to security in search of new horizons and the unknown, who aim for the stars and—when they fall down—get up and try again.

In this frame of mind, in my middle forties, I considered the alternatives which faced me. I could stay in a large industrial town (when I longed for the country); I could remain in a very lovely top floor flat (but I wanted a garden); I could keep on working for the ten years before retirement became compulsory and then, at 55 years of age, and secure of a pension, accept a part-time job with little responsibility (oh no!). On the other hand, I could burn my boats (I love fires); I could draw up my roots, face a completely new life while I still had some fight and ambition left; I could start all over again with a clearer idea of my goal.

The ideal in my mind was to sink my few shekels in a business of my own, in partnership with a friend of long standing and great good humour.

Our first considerations were straightforward: the type of business, the locality, whether to buy a going concern or start from scratch, whether to start on modest lines in a quiet backwater and move later or to risk paying a high rent for a really noticeable situation. Dealing with these problems in the reverse order, we decided to plump for the good location and to



Stocktaking: the partners examine some recent lines

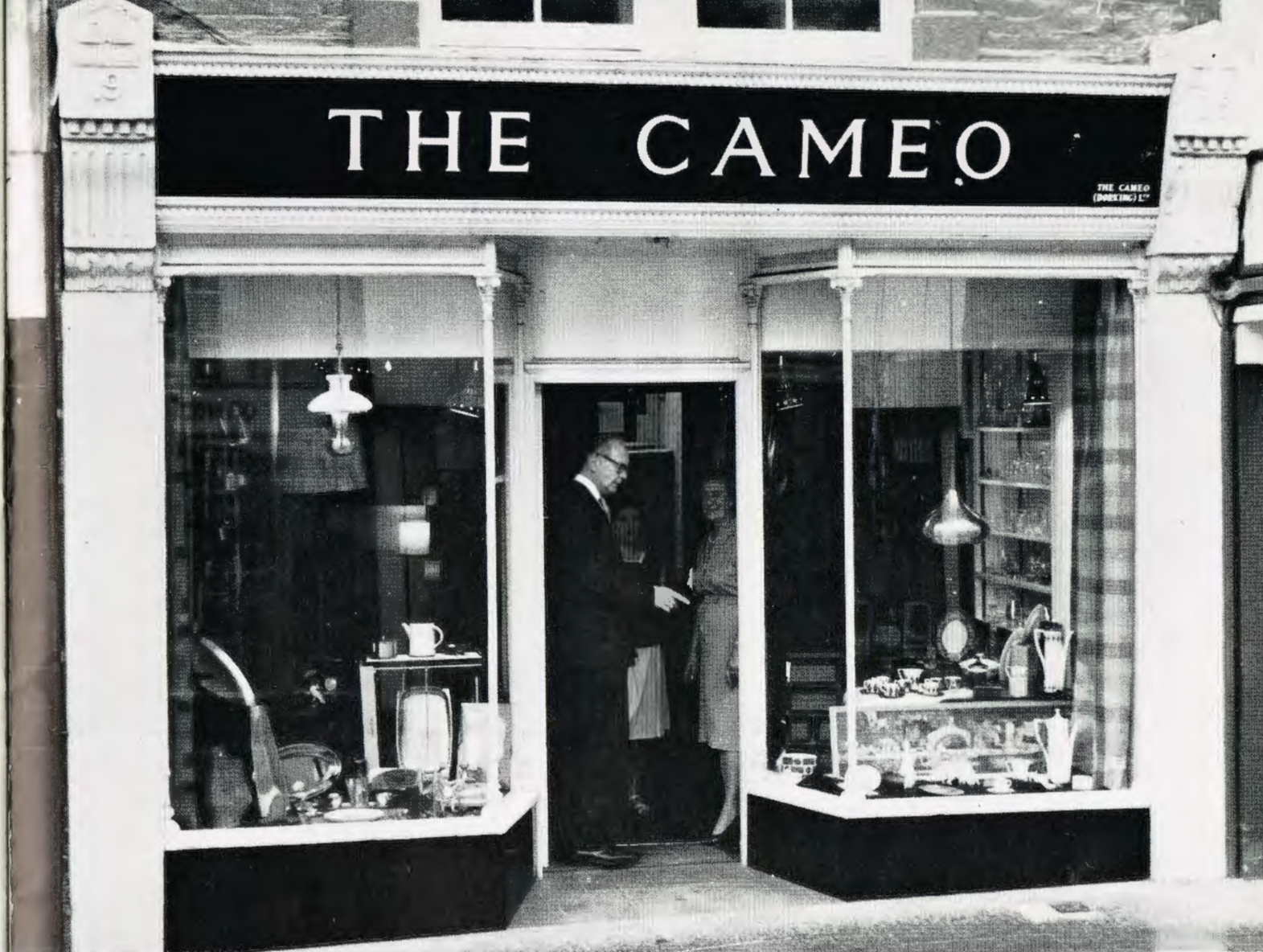
start with all guns blazing. We now have an attractive little building—a shop 15 ft. × 35 ft. with two store-rooms over—on the busiest corner of a lively shopping centre. We started from scratch, developing our own ideas instead of adapting someone else's traditions. The locality was largely governed by the necessity of remaining within reasonable reach of London, so that my partner's husband could make the daily trek to his office without too much difficulty. Dorking seemed to offer everything we required: it is a busy little market town 35 minutes by train from London and only an hour by car from the coast. It is surrounded by hilly, wooded country, and from every street these woods and hills are visible. The type of business? We sell original paintings and prints; Scandinavian furniture, fabrics and furnishing materials; glass; porcelain; hand-

thrown pottery; woodcarving; handmade jewellery—everything, in fact, which helps to turn a house into a home. And our qualifications for the job? Well, Joan contributes her years of experience in salesmanship, her very real flair for display, her valuable contacts with suppliers and artists. I threw in my extensive experience of administration and book-keeping, a more-than-nodding acquaintance with the world of art, a gift of the gab, and unbounded enthusiasm. We both have a great capacity for enjoyment and for hard work, a genuine interest in people of all types, and a sense of humour which carries us through many difficult situations.

Our first job was to gut the interior of a somewhat dingy little shop and plan its redecoration—black beams and archway, white walls and shelves; natural wood panelling to show off our paintings; a charcoal fitted carpet on which to display our teak furniture. Our opening stock followed broadly the lines outlined above; we strive always to buy the slightly unusual and to build up a reputation for originality and good value. Our success in this aim is measured by the number of customers who describe us as a miniature Liberty's or Heal's, and by how often they come back—sometimes to buy, sometimes just for a chat and "to see what is new since our last visit."

Our first year has proved more encouraging than we had dared to hope. Dorking, we feel, has adopted us and is kind. During our opening weeks everyone entered into the spirit of the venture—our builder, our bank, our landlord, the delivery men from British Railways and various Road Services, our neighbouring tradesmen—all ploughed in with good will and some tolerant amusement and did everything in their power to help. Friends who travel tell us of furnishing trends overseas or bring back examples of handicrafts which we might stock, and our shelves now carry a representative collection of the craftsmanship of European countries, of Kenya, Rhodesia and India as well as from England, Scotland and Ireland.

We recently held a three weeks' exhibition of Finnish furniture, fabrics, glass and pottery, backed by a one-man show of original paintings by Deborah Jones of Bristol, who has designed many sets for Stratford, Glyndebourne, the Mermaid



"Like the one in the window!" A customer indicates his choice to Miss Hock

and for films. The preview, held the night before the exhibition opened, was attended by at least 200 of our regular customers and earned us some useful publicity in the local press and a small (very small, but none the less helpful) mention in *House and Garden*.

We are both working as we have never worked before and enjoying every minute of our six-day week. At times our feet protest painfully about the number of times they are forced to carry us up and down stairs carrying heavy loads (both our ample figures and loaded trays of pottery and steel, porcelain and glass). Our reward comes when satisfied customers of all ages and both sexes purr about their purchases and come back on some future occasion bringing their friends with them. A few plum jobs have come our way to encourage us, such as the complete furnishing of a new boardroom

at a London factory, or the rapidly growing number of wedding lists which young people are leaving with us.

At the end of each day we are human enough to count up the lolly in our till and break a bottle of bubbly on the occasions which call for celebration—or go home to a meal of scrambled egg and cheese in the lean weeks.

And when the day is done, Joan returns to her flat in a large country mansion, to prepare a meal for her husband and her outsize poodle and to think up new ways of displaying our often lovely wares to their best advantage, while for my part I drive the ten minutes to my dream bungalow—a grey stone converted coach-house built in 1780, with a double hedge of lavender leading up to the front door with its surround of moss roses and winter jasmine, and its view over a superb golf course. At the back the garden drops

in three terraces to the River Mole, and on the opposite bank fields rise steeply up the slope of Box Hill, one of the Home Counties' most renowned beauty spots. My first job each evening is to exercise "Kynoch" (the pedigree boxer puppy given to me as a parting gift by my generous friends at Witton) on the golf course, and the rest of the evening is devoted to household chores and gardening.

When I left Witton, many people ragged me about going into an early retirement. All I can say is that I have never worked so hard in all my life, and I have never enjoyed myself quite so much. With continued good health, God willing, this intensely interesting activity should continue for many years beyond the day upon which I should have had nothing better to expect than to sit back and start dreaming away my declining years.



# THE PARTHIAN SHOT

by Margaret Thompson

The time was 1942, and being an Admin. Sergeant in the Women's Auxiliary Air Force stationed in Northern Ireland had its advantages, but also its disadvantages.

An advantage was living in a large comfortable house, in charge of some eighty Waaf. A disadvantage was the American Army, which had arrived in the small town, and ten thousand Yanks can be quite something.

Before you could say General Eisenhower, the Yanks were organised and invitations galore swamped our office. The powers that be were a bit "Colonel Blimpish" about it all, as nothing like this had happened in their King's Regulated lives before. Something had to be done about it, so they decided to hold a conference.

Because of the nature of their work, only about a quarter of the girls would be able to go at one time to any of the events to which they all were invited. So I was deputed to put up lists, on which they could indicate which they would like to attend when their free time allowed. In addition, their weekly late passes would be extended to one or two o'clock in the morning. As it was also arranged that Sergeant would always accompany the Waaf on these outings, it wasn't long before "And the Sergeant came too" became my signature tune and I realised grimly that while each girl was going out once a week, I should be going along on at least four nights a week if the system was to work.

At first, I must confess, I took on my new duties quite gladly, but I'd overlooked how much the human physique could stand.

I turned such chores as the morning parade over to five assorted corporals. This meant one morning a week each, as Saturday and Sunday were exempt.

Any demur or rebellion on their part was met with a mild form of blackmail on mine. "Fair enough. If you don't take the parade, I don't attend the dances." After all, I had to have some sleep.

Even so the pace began to tell, and my thirty-five-year-old frame began to protest and the eagle eye for which I was

renowned began to lose its power of penetration.

It wasn't only the four nights I spent being "universal aunt" to the Unit, there were the remaining three evenings which were employed chaperoning the Waafery. The "stay at home" type of girls who didn't want to go gallivanting with the American forces were allowed to bring their boy friends to the Waafery for social evenings—but only if I kept my eye on them!

The result of this was madly gay evenings, beetle drives, whist drives, gramophone recitals, sing-song sessions, etc.

This then was the programme when the incident happened. I woke one morning as bright as a whistle and decided to take the parade myself, which was surprising considering the potency of the cocktails pressed on us the previous evening and the late hour at which I had retired.

The morning parade was held at 6.45, in front of the house. I arrived a few minutes before 6.45 expecting to see surprised expressions on the faces of the airwomen at "Sarge" once again taking parade. But I didn't see surprise on anybody's face. There wasn't a face in sight to see surprise on.

At one minute to seven there was a screech from an upper window, "My God, the Sergeant's down there waiting to take parade!" Approximately one minute later a platoon of bodies spilled through the double front doors and frenziedly jockeyed for position, putting up a valiant fight to secure a place in the middle or rear line. The shuffling stopped—I was silent and impassive as flint.

The reason for my silence was simple. I was struck dumb by that assembled company which looked like a cross between Casey's Court and Heath Robinson. My continued silence began to take effect. An intuitive look of doom settled on their faces. I could only guess what had been going on during my early morning absenteeism and made a mental note of the heads about to fall in the corporal ranks.

I began to take the roll call. It was sheer bad luck that Adams, who was always called first, should have been pushed right into the middle of the front line. She had to be seen to be believed. Her synthetic ash blonde hair was still in curlers. An unsuccessful attempt had been made to push the lot under her cap, but one had escaped. The top button of her tunic was fastened to the second buttonhole, and one side of her skirt was hitched two inches higher than the other. I dealt exclusively with the unfortunate Adams for the next four minutes before continuing with the rest of the roll call. Only the time factor prevented me from lavishing my attention on the remaining twenty.

Memory was returning with relentless clarity of jobs badly done and of general sloppiness in appearance and of deportment going unchecked. But most of all I was reproachful with myself for having allowed the Unit, which was my pride and joy, to deteriorate to the level of the dithering scarecrows before me. Obviously discipline was to be the order of the day for both sides, and so I once more became a disciplinary sergeant with a capital D.

Addressing my terse remarks to them collectively, I prophesied what was about to take place in the immediate future. As I warmed to my theme and gave them a further peep into the future of how I would deal with any G.I. found loping around the Waafery, I noticed something strange. A gleam of interest had spread over the immutable dead-pan faces of the airwomen. They were not listening to me. Something behind me was taking their attention. I whipped round and received the shock of my life. A horse had its nose about an inch from my shoulder. I jumped, lost my balance, and had to make an undignified recovery back on my feet. I roared at it to get away. Its reaction was to kick both hind legs in the air and mill around doing a kind of rodeo act. I gave another bellow. The thing appeared to hesitate, then quite deliberately turned its head and gave me a dirty look. That look was the most astonishing thing I've



*I was struck dumb . . .*

seen in my life, and there was a gale of laughter from the ranks. After a third yell, the quadruped took the hint and trotted away into the shrubbery.

In a fury, I turned my attention to the squad once more and drilled them as I'd never drilled before. At the end of twenty minutes, after I'd done permanent damage to my larynx and the Waaf were exhausted, I dismissed them.

When the last of the Waaf had made her way to breakfast I followed more slowly to my room for a much-needed cup of tea and reflected how far I would carry out my threats. My room was at the end of the long corridor leading from the large front hall. When I reached it I got another shock. I had a visitor, the horse. It had knocked everything off the table, devoured the cornflakes and toast, had reached the marmalade stage and was licking up the sticky mess from the broken jar. It was not a big horse, not in the shire class, but it looked immense in that small room. By now I was getting a bit fed up with this four-footed menace, so I commanded, with what I felt was great authority, "Out of this you get!" The horse, completely disregarding me, went on eating my marmalade. I tried again and gave it a shove in an effort to turn it to-

wards the door. Up came those hind legs again. I decided it wasn't wise to argue with a four-legged beast who paid early morning social calls in that restricted space, especially when it had such a vicious leg movement.

I went to get a rope from the back premises, at the same time dazedly wondering how on earth the creature had got in. I nipped into the kitchens to ask an astonished cook-corporal for a handful of lump sugar and an apple and returned to cope with my unwelcome visitor.

Approaching it with great caution while it was inquisitively examining the far side of the table, I got the rope smartly round its neck, then wooing it with the loot I had procured from the kitchen, I eventually managed to turn it and lead it through the door into the corridor.

Two Waaf emerging from the dining room saw the amazing sight of Sergeant gingerly leading forth the animal, its hoofs beating a tattoo on the grey and red tiles. They backed into the dining room and spread the news to the rest of the Waaf, who all rushed to the window to see the phenomenon.

By this time I had led my visitor out on to the tarmac. Seeing the women crowd-

ing and peering through the windows, I stopped our perambulations and called out jauntily, "Just look what I found!"

This was the grand and glorious moment the four legs were waiting for. Up came that left hind hoof and planted itself on you know where of my anatomy. With a howl of pain I let go the rope and the horse romped off, never as far as I know to be seen again.

I limped for weeks. From my hip to my heel I turned a remarkable shade of navy blue which gradually changed to every colour of the rainbow and even more gradually faded.

Even so, there was to be an afterglow. My young brother, serving with the Royal Signals, whose only claim to fame was to rise to the elevation of lance-corporal (temporary, acting, unpaid) for a few weeks, was convalescing in an Algerian hospital from a blown-up tank and twenty skin graftings for burns. I wrote to him about my woes, thinking to cheer him up and that perhaps I might even receive a little sympathy in return. His reply was eloquent of what I felt at the time to be horse sense. "All my life," he wrote, "I have wanted to see a sergeant kicked in the pants, and now it has to happen three thousand miles away!"



# Plastics in the HOUSE OF THE FUTURE



*Rear view of the house, showing the living room which opens on to a small terrace. In the foreground is the bedroom wing. Right: the living room seen from the entrance lobby*

The average house in Britain today rarely contains more than 100 lb. of plastics. In the Development House, which has been built by Plastics Division at Welwyn, 3 tons have been used. If plastics were used on this scale in every house built in Britain this year, more than the present total UK production of plastics would be needed by the Building Industry alone. Plastics Division's house has been designed and built with a two-fold purpose. Firstly to show the uses of plastics possible now and in the near future, and secondly to provide a test rig for trying out new techniques and applications as they are developed within the Division. Here we highlight some of the special

**Walls.** The main walls of the house are made from expanded concrete blocks which are reasonably priced and easy to lay. However, these walls require the protection of an impervious surface and have, therefore, been clad with rigid PVC sheet which also provides colour and weather-proofing. The composite walls keep the house warmer than would twice the thickness of conventional brickwork. One wing of the house is designed with load bearing cross-walls, the ends of which are joined by lightweight panels prefabricated off the site. Some have lightweight concrete cores and are faced on the outside with interlocking PVC extrusions and internally with fire resistant asbestos/cement sheet, which is decorated

with ICI (Hyde)'s new 'Vymura' washable wallpaper.

**Roof.** The roof is of lightweight bonded strawboard sprayed with a PVC solution to provide a tough waterproof skin which forms a perfect seal round the vent pipes which project from the roof. Also sealed into the roof with this spray is a large panel of translucent corrugated PVC sheet, which provides extra daylight for the dining area of the living room. The spray is similar to that originally used for "cocooning" warships and its excellent record over the past ten years in this application justifies its use in roofing.

**Gutters and Drainpipes.** Shaped PVC sheet provides a lip round the edge of the roof under the PVC spray. This lip





# THE BOBBIN BOYS

by Philip Reilly

No more individual group of workers is to be found in the whole of ICI than the one hundred and seventy or so youngsters at Wilton who go locally by the name of the Bobbin Boys. It's an odd name, but an

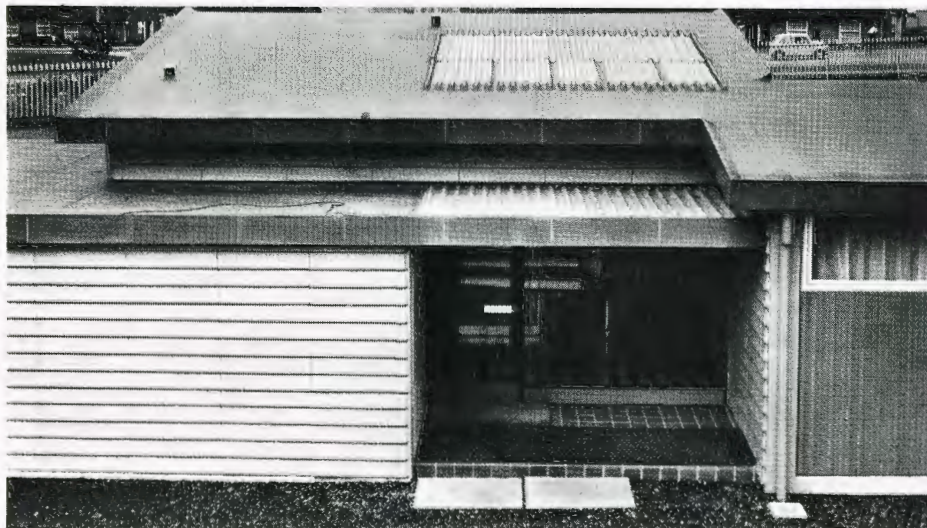
accurate one. Everyone in the group is between the ages of 15 and 18, and their main job, described briefly, is to maintain a steady supply to the spinning plants of the metal and plastic bobbins on to which

'Terylene' or polypropylene fibres are wound for despatch to textile manufacturers and other customers. Every week about 450,000 used bobbins are received back from customers, and each one has to

*Denis Milner examines returned bobbins which, if satisfactory, will be re-used in the plant*



*Looking through the French windows to the dining area of the living room, with the kitchen in the background*



*A semi-aerial shot of the house, showing the experimental roof and the large skylight of corrugated PVC over part of the living area*

forms the rainwater gutter and is an integral part of the roof construction. The PVC down-pipes which take the water from the gutter are from the 'Rym-way' range of rainwater goods made by Yorkshire Imperial Plastics Ltd., a recently formed ICI subsidiary.

**The Interior.** There is no plastering or painting required anywhere in the house. The main walls are finished with plasterboard panels which are supplied already finished with a flexible PVC skin and which are easily attached with hidden fixing devices to the wooden battens nailed to the walls. More expensive but extremely tough melamine-veneered board, in a striking pattern, has been used in the entrance porch and living area, while one small bedroom has been treated with a PVC spray to provide a completely crack-free and impervious surface to the walls and ceiling. Various types of ceiling finish are being tested. The kitchen ceiling is particularly interesting. Fluorescent lighting tubes are hidden behind a suspended ceiling of flexible translucent PVC skins stretched over metal frames. This forms a ceiling which looks well and has the additional advantage that, when the lights are switched on, the evenly diffused light completely eliminates shadows in the working area.

**Doors and Windows.** The doors in the bathroom, lavatory and cloakroom are faced with PVC sheet to give an easily cleaned attractive surface. The back door is made from interlocking hollow PVC extrusions. Opaque and translucent extrusions have been assembled in a frame to give a coloured door with a central translucent panel. The "up and over" garage door has transparent panels of wire-reinforced PVC. White PVC extrusions clip over metal cores to provide window frames which require no painting and are very resistant to corrosion.

**Plumbing.** All-plastic pipes, some experimental, are being tested out for both the cold and hot water systems. The cold water tank, now being marketed, is the first of its kind made from 'Alkathene,' the tough non-corrosive ICI plastic which withstands freezing.

Along with nylon and 'Perspex' door handles and nylon door locks, metallized 'Melinex' film stretched over a frame is being used as mirrors. These do not mist as readily as ordinary mirrors, and because of their light weight, were originally developed for use in aircraft.



be unpacked, cleaned, inspected and, if passed, prepared for re-use.

Between them, the boys handle something like 90,000 bobbins a day to feed the spinning plants and they also renovate, or make up from new materials, many thousands of the metal-framed cardboard boxes in which the bobbins are packed.

Bobbins and boxes may seem unimportant, particularly in a works where millions of pounds have been spent on complicated chemical plants or on the latest in fibre-making machinery, but without an assured flow of the right bobbins and the right boxes, in the correct quantities and at the correct times, present high outputs of 'Terylene' could not be achieved.

In many ways the Wilton bobbin boys

are unusual. It is unusual within the Company to find so many young employees working together rather than scattered as individuals among groups which include every age up to 62 or 65. It is also uncommon, at their age, for them to be on work which has such a clearly defined place in the direct chain of production, and it is unusual for them to have the opportunity, as they do, of increasing their wages through a bonus scheme. Perhaps more than any of their contemporaries in ICI—more than the laboratory assistants, the apprentices, the secretarial trainees or the junior clerks—they are very



Below: James Laverick (left) and Sydney Brear assembling boxes in which bobbins of yarn will be despatched to customers. Right: Leslie Bowdy (left) and John Marsh checking the dimensions of "waisted" bobbins. In the background is chargehand Tom Russell

much a separate, closely identified group of youngsters working as a team in an adult world.

Not that being "different" seems to cause them much concern. If anything, the opposite is true. They appear to get a real but unexpressed feeling of satisfaction from doing a job which is concerned directly with production, and they are certainly pleased to be on bonus. As for worrying about working entirely among others of roughly their own age, they don't. As one 16-year-old explained, "We like it. You see, we all get on well together."

And they really do get on well together. For administrative reasons the boys belong to one or other of two sections of 'Terylene' Works. About 60 are on what is known as "customer returns" and are in the Distribution Section headed by Mr. Douglas Gill, with Mr. Ken Canney as their manager. The other 100 or so are on "bobbin recovery" in the Services and Ancillaries Section headed by Mr. Raymond Drew, and their manager is Mr. Dennis Hogg.

That is how it looks on the organisation charts, but so far as the boys are concerned the organisational split counts for little. They are all bobbin boys together. They think of themselves as part of a single group and are prepared to move as required from job to job in the warehouse. Understandably, some jobs are more popular than others. Making boxes, for instance, gives a fine chance to let off steam by banging away with a hammer, whereas stripping yarn from returned bobbins allows you to be busy with your hands while enjoying a quiet think. Some jobs appeal because they have to be done as one of a small team, others because they are individual tasks which depend entirely on a personal effort.

This sense of belonging to one group is fostered wherever possible by all the adults who in one way or another are responsible for the boys' work and welfare—their managers and supervisors, their TGWU shop steward, John Trattles, and their works councillors, George Metcalf and Bill Dougall. They are encouraged to take an interest in Union and Works Council activities and to vote in elections, and they also elect representatives to a Youth Committee which has Mr. Drew as chairman and Mr. Archie Campbell, a 'Terylene' assistant personnel officer, as secretary. At regular meetings

of this committee the boys discuss production efficiency, safety, amenities and so on with the management-appointed members (these include Mr. Hogg and Mr. Canney as well as foremen and assistant foremen), and from time to time they hear talks by guest speakers.

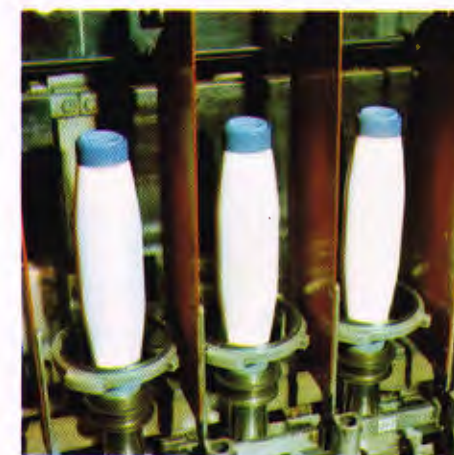
With guidance from Mr. John Humphreys, the Works' Communication Officer, who is well known for his work for young people both at Wilton and with outside organisations, the boys run their own successful social committee. They raise funds throughout the year, and these, with an allocation from the Company, are used to pay for an annual outing—this year it was to Scarborough, last year to Blackpool—and for occasional theatre visits, dances and other events.

There is a bobbin boys' cricket team, which in annual Site knock-out contests has more than once provided shocks for older and more experienced sides, and last winter their soccer eleven won the May Trophy in the 'Terylene' inter-departmental competition.

One thing which sooner or later bothers all the boys is the question, "What sort of job will I do when I'm 18?" Up to a couple of years ago, for most of Wilton's bobbin boys this was a question with a ready-made answer. They came into the warehouse at 15, either direct from school or after working elsewhere on the Site as messengers, and they stayed with the bobbins and boxes until called up for National Service three years later. If they returned to Wilton on leaving the Army or the RAF it was as adults, and they competed for adult jobs with other candidates.

Now that National Service is ended, the position is different. Sooner or later every boy wonders what he will move on to when he becomes 18, and most of them, even the younger ones, have fairly clear ideas of what they would like to do. Some, like 17-year-old Bob Kendall, hope to go into the fibre-spinning plants, perhaps to become drawtwist operators; others, such as 16-year-old David Cook, whose father is in Olefine Works, would like to be chemical process operators. David Cutler, who is keen on motor cars and at 16 is already saving to buy a car of his own, is among a number who would like to work on "something to do with machinery or engineering"; Ken Pickering, who is also 16, would like to try clerical work because he has always been "good at figures."

Some have more definite ideas about



Keith Duck and David Gray (above) on this year's outing of the Bobbin Boys to Scarborough. 'Terylene' yarn (left) is wound on to bobbins in the Spinning Plant

from here?" is no longer so acute. They are also, of course, considered for other jobs, and for the special Chemical Process Operators' course which has been developed at Wilton. Because they are staying on after 18 an increased interest is taken in their progress both in the warehouse and at the further-education classes they attend for one week in every six at a local technical college. At work, some are appointed as "youth leaders" and under supervision by the foremen and assistant foremen are made responsible for a team which may include as many as a dozen or more boys. Each sees to it that his team follows a set work programme and is kept well supplied with bobbins, boxes or whatever else is needed.

In these and other ways the boys are being accepted as recruits who are likely to stay—and although they are no more serious in their outward approach to things than any crowd of 15–18-year-olds would be—they give the impression that they are pleased about it.

the future than others; but all are involved in this problem, which is given very careful consideration by management. It has been tackled in a number of ways, and an important move towards a solution was made some two years ago, when it was agreed with the appropriate trade union that about 20 General Worker jobs at Wilton would normally be reserved for youths between the ages of 18 and 20. The bobbin boys now know that at 18 they will be considered for these "youth designated" jobs, as they are called, and that their problem of "where do we go



**A diminutive locomotive named after a Deputy Chairman.**

*Mr. P. C. Allen took a great fancy to a narrow-gauge industrial locomotive he saw at the Torreleviega Works of Solvay et Cie in Spain.*

*The compliment has been returned by naming the engine after him*

